SA-WMSP69

SERVICE MANUAL

US Model

Ver. 1.0 2005.05

- SA-WMSP69 is the subwoofer section in HT-6900DP/9900M.

SPECIFICATIONS

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION:
With 6 ohm loads, from 28 – 200 Hz; rated 120 watts, minimum RMS power, with no more than 0.8% total harmonic distortion from 250 milliwatts to rated output.

Speaker system	Active subwoofer, magnetically shielded
Speaker unit	250 mm cone type
Enclosure type	Acoustically loaded bass reflex
RMS output	160 W (6 ohms, 100 Hz, THD 10%)
Input	LINE IN (input pin jacks)
Power requirements	120 V AC, 60 Hz
Power consumption	120 W
Dimensions (w/h/d) (Approx.)	337 × 410 × 366 mm (13 1/4 × 16 1/8 × 14 1/2 inches) including front panel
Mass (Approx.)	13.0 kg (28 lb 11 oz)

Design and specifications are subject to change without notice.

SUB WOOFER

9-879-650-01
2005E04-1
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Sony Corporation
Audio Group
Published by Sony Engineering Corporation

SONY®

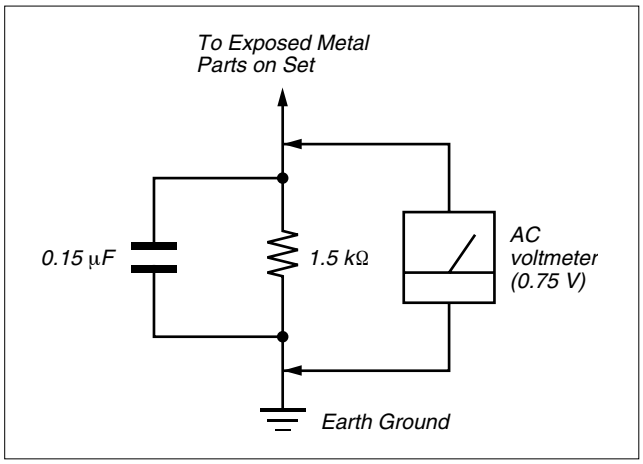
SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage.
Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers.). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)



(Fig. A)

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

TABLE OF CONTENTS

1. DIAGRAMS
1-1. Circuit Boards Location 3
1-2. Schematic Diagram – Main Section – 5
1-3. Printed Wiring Boards – Main Section – 6

2. EXPLODED VIEWS
2-1. Front Section 7
2-2. Rear Section 8

3. ELECTRICAL PARTS LIST 9

● UNLEADED SOLDER

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

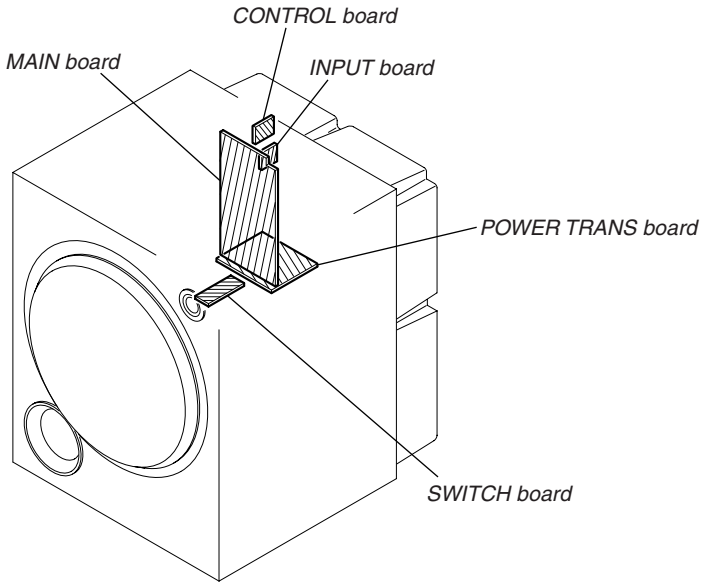
: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

SECTION 1
DIAGRAMS

1-1. CIRCUIT BOARDS LOCATION



• NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For schematic diagrams:
Note:

- All capacitors are in μF unless otherwise noted. (p: pF) 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- ▭ : panel designation.

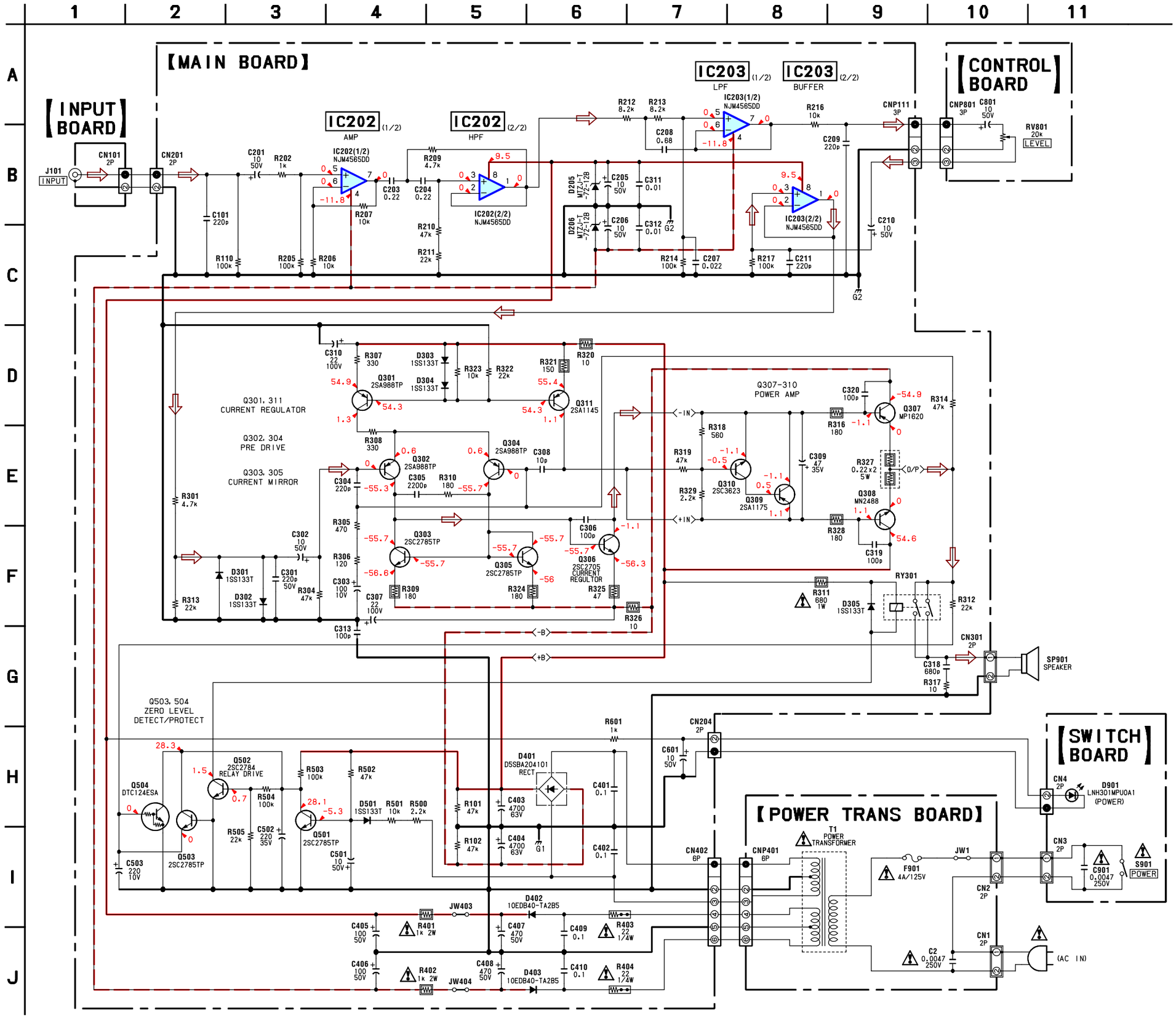
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- ▬▬ : B+ Line.
- ▬ ▬ ▬ : B– Line.
- Voltages are dc with respect to ground under no-signal (detuned) conditions.
  no mark : Power on
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : AUDIO

For printed wiring boards:
Note:

- o——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ▬ : Pattern from the side which enables seeing.

1-2. SCHEMATIC DIAGRAM — MAIN SECTION —



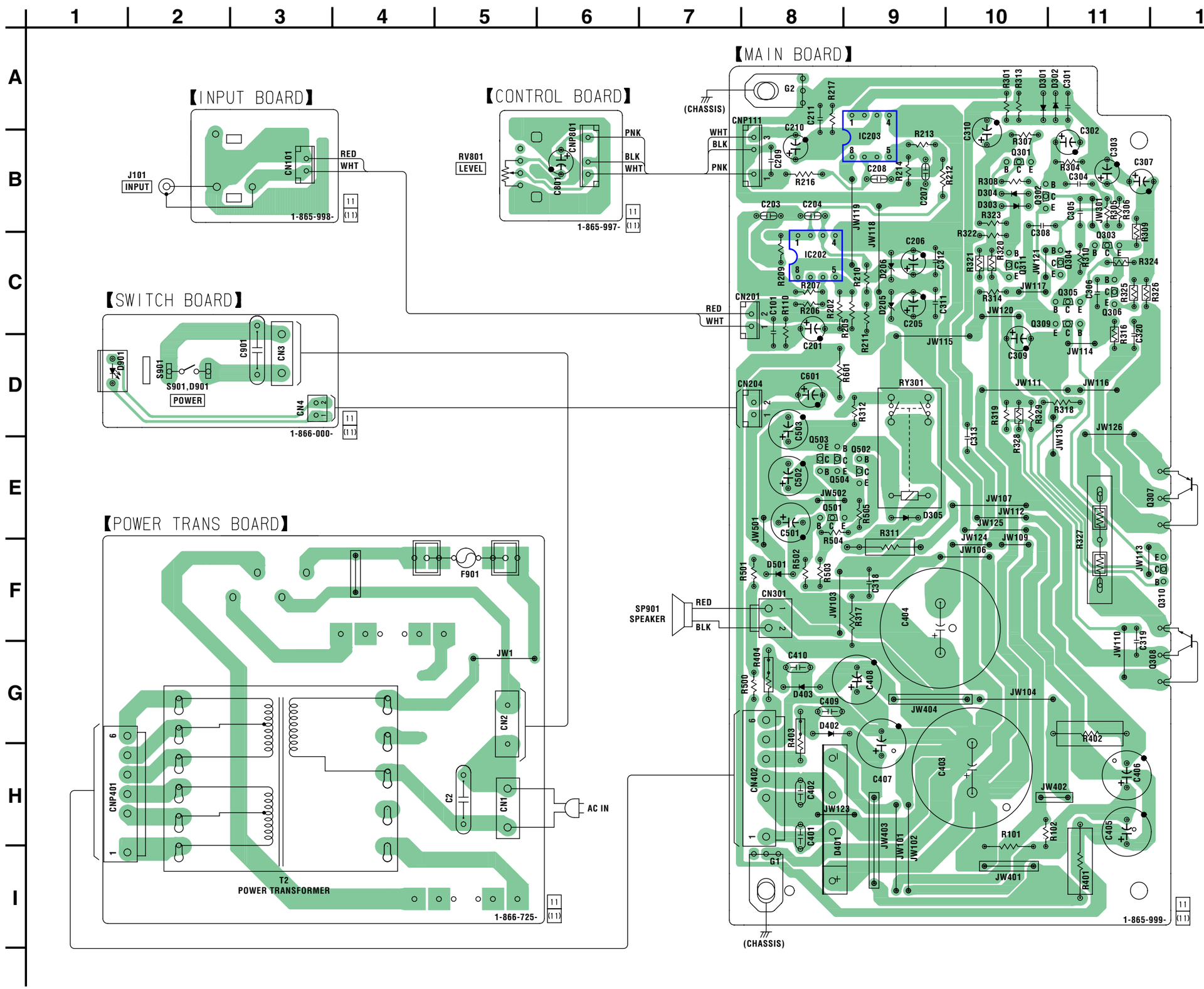
1-3. PRINTED WIRING BOARDS — MAIN SECTION —

• Refer to page 3 for Circuit Boards Location.

: Uses unleaded solder.

• Semiconductor Location

Ref. No.	Location
D205	C-9
D206	C-9
D301	A-10
D302	A-11
D303	B-10
D304	B-10
D305	E-9
D401	I-8
D402	G-8
D403	G-8
D501	F-8
IC202	C-8
IC203	B-9
Q301	B-10
Q302	B-10
Q303	C-11
Q304	C-11
Q305	C-11
Q306	C-11
Q307	E-12
Q308	G-12
Q309	C-10
Q310	F-12
Q311	C-10
Q501	E-8
Q502	E-9
Q503	E-8
Q504	E-8



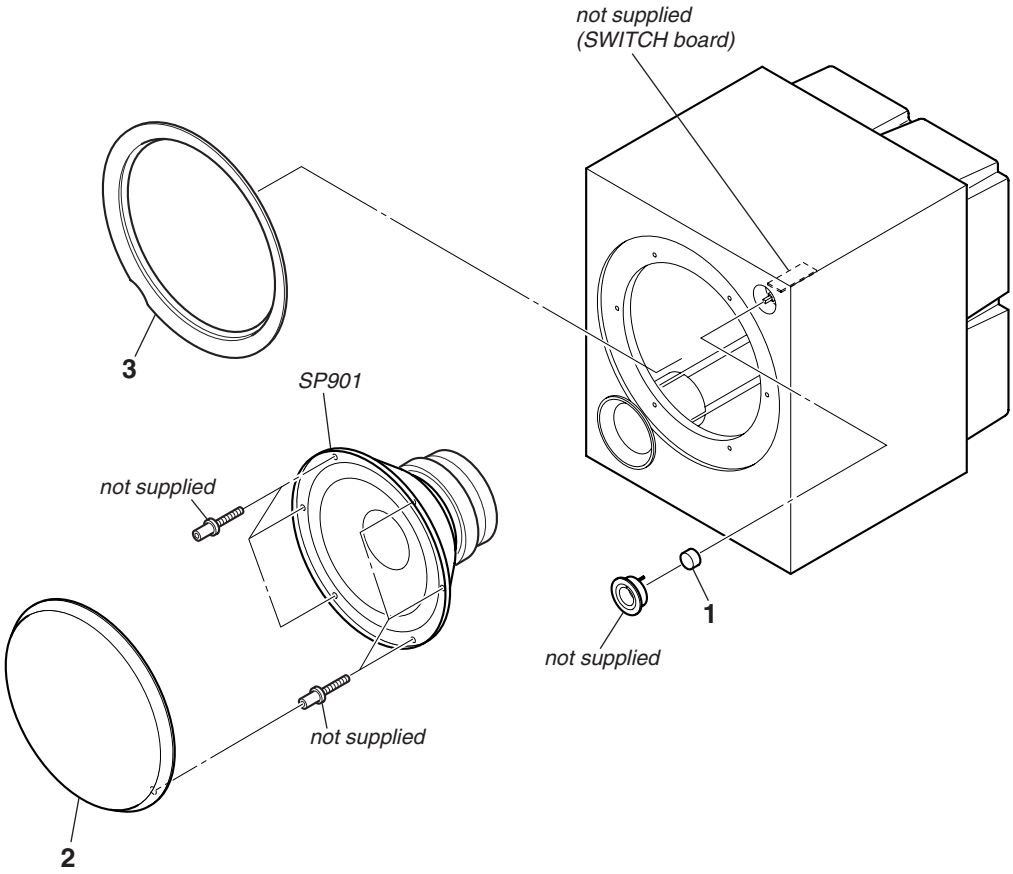
SECTION 2
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE) ... (RED)
  ↑ Parts Color ↑ Cabinet's Color
- Accessories are given in the last of this parts list.

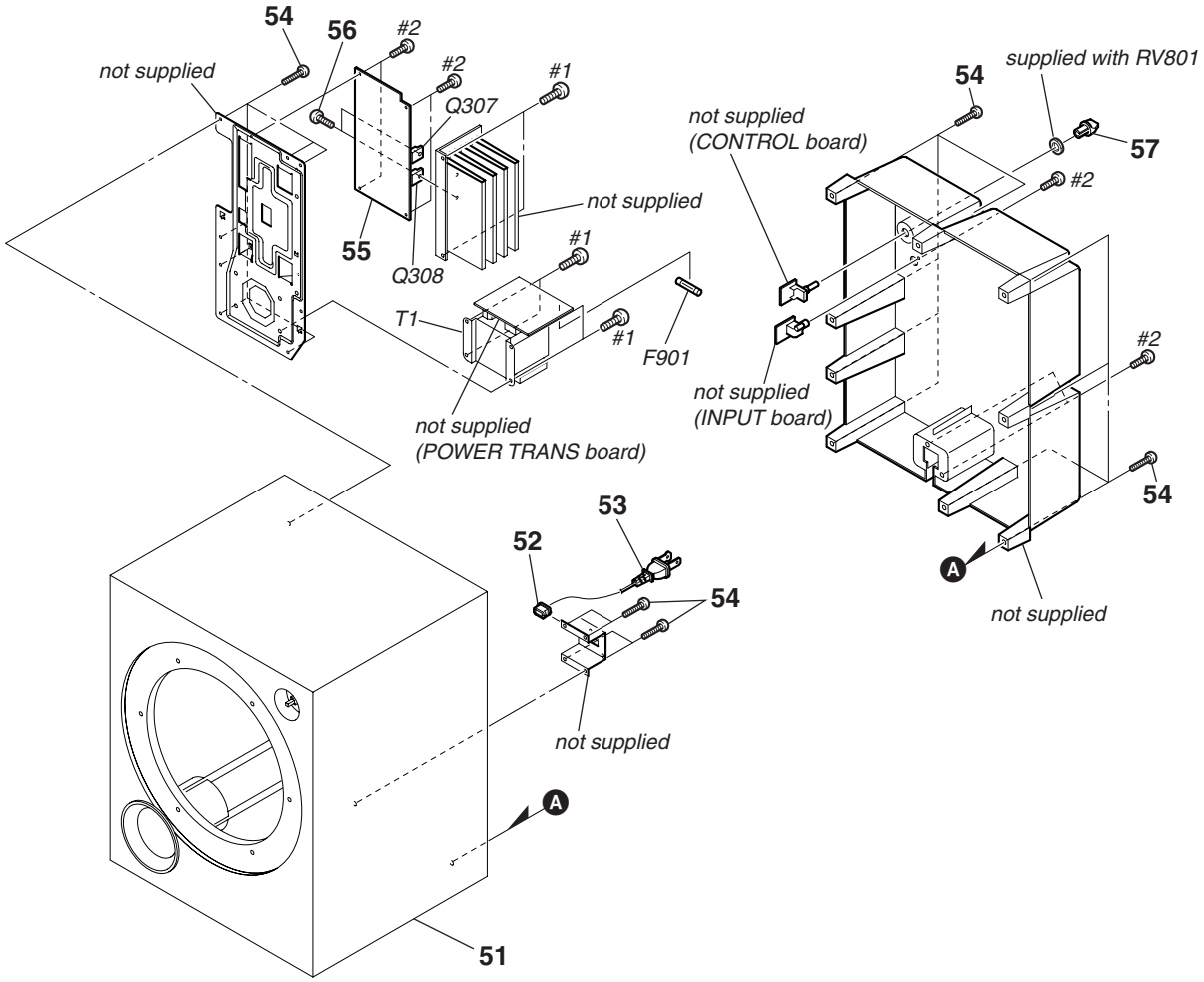
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

2-1. FRONT SECTION



Ref. No.	Part No.	Description	Remark
1	4-253-282-31	PUSH KNOB	
2	4-253-280-01	GRILLE FRAME	
3	4-253-279-11	WOOFER RING	
SP901	1-825-768-11	LOUD SPEAKER (25cm)	

2-2. REAR SECTION



Ref. No.	Part No.	Description	Remark
51	A-1084-745-A	SPEAKER CABINET ASSY	
* 52	3-703-244-00	BUSHING (2104), CORD	
⚠53	1-783-820-11	CORD, POWER	
54	2-349-022-11	SCREW +BVTP (4X20) (TYPE1)	
55	A-1090-358-A	MAIN BOARD, COMPLETE	
56	3-905-609-31	SCREW (TRANSISTOR)	
57	4-999-482-81	KNOB (VOL)	

Ref. No.	Part No.	Description	Remark
⚠F901	1-533-452-12	FUSE, GLASS TUBE (DIA. 5) (4A/125V)	
Q307	6-702-391-01	TRANSISTOR MP1620-OPY-MK	
Q308	6-702-390-01	TRANSISTOR MN2488-OPY-MK	
⚠T1	1-443-652-11	TRANSFORMER, POWER	
#1	7-685-881-09	SCREW +BVTT 4X8 (S)	
#2	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	

SECTION 3
ELECTRICAL PARTS LIST

CONTORL | INPUT | MAIN

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ, for example:
  uA.. : μA.. uPA.. : μPA..
  uPB.. : μPB.. uPC.. : μPC.. uPD.. : μPD..
- CAPACITORS
  uF : μF
- COILS
  uH : μH

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
		CONTROL BOARD			
		**********			
		< CAPACITOR >			
C801	1-126-964-11	ELECT	10uF	20%	50V
		< CONNECTOR >			
CNP801	1-691-765-11	PLUG (MICRO CONNECTOR) 3P			
		< VARIABLE RESISTOR >			
RV801	1-227-511-11	RES, VAR, CARBON 20K (LEVEL)			
**********					
		INPUT BOARD			
		**********			
		< CONNECTOR >			
* CN101	1-506-944-11	PIN, CONNECTOR 2P			
		< JACK >			
J101	1-815-025-11	JACK, PIN 1P (INPUT)			
**********					
	A-1090-358-A	MAIN BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-128-813-11	CERAMIC	220PF	5%	50V
C201	1-126-964-11	ELECT	10uF	20%	50V
C203	1-137-190-11	FILM	0.22uF	5%	50V
C204	1-137-190-11	FILM	0.22uF	5%	50V
C205	1-126-964-11	ELECT	10uF	20%	50V
C206	1-126-964-11	ELECT	10uF	20%	50V
C207	1-136-157-00	FILM	0.022uF	5%	50V
C208	1-136-175-00	FILM	0.68uF	5%	50V
C209	1-128-813-11	CERAMIC	220PF	5%	50V
C210	1-126-964-11	ELECT	10uF	20%	50V
C211	1-128-813-11	CERAMIC	220PF	5%	50V
C301	1-128-813-11	CERAMIC	220PF	5%	50V
C302	1-126-964-11	ELECT	10uF	20%	50V
C303	1-104-658-11	ELECT	100uF	20%	10V
C304	1-128-813-11	CERAMIC	220PF	5%	50V
C305	1-162-302-11	CERAMIC	0.0022uF	20%	16V
C306	1-162-282-31	CERAMIC	100PF	10%	50V

Ref. No.	Part No.	Description			Remark
C307	1-128-560-11	ELECT	22uF	20%	100V
C308	1-162-199-31	CERAMIC	10PF	5%	50V
C309	1-126-947-11	ELECT	47uF	20%	35V
C310	1-128-560-11	ELECT	22uF	20%	100V
C311	1-127-876-11	CERAMIC	0.01uF	10%	50V
C312	1-127-876-11	CERAMIC	0.01uF	10%	50V
C313	1-162-282-31	CERAMIC	100PF	10%	50V
C318	1-128-819-11	CERAMIC	680PF	5%	50V
C319	1-162-282-31	CERAMIC	100PF	10%	50V
C320	1-162-282-31	CERAMIC	100PF	10%	50V
C401	1-136-497-81	FILM	0.1uF	5%	50V
C402	1-136-497-81	FILM	0.1uF	5%	50V
C403	1-104-482-11	ELECT	4700uF	20%	63V
C404	1-104-482-11	ELECT	4700uF	20%	63V
C405	1-126-968-11	ELECT	100uF	20%	50V
C406	1-126-968-11	ELECT	100uF	20%	50V
C407	1-126-971-11	ELECT	470uF	20%	50V
C408	1-126-971-11	ELECT	470uF	20%	50V
C409	1-136-497-81	FILM	0.1uF	5%	50V
C410	1-136-497-81	FILM	0.1uF	5%	50V
C501	1-126-964-11	ELECT	10uF	20%	50V
C502	1-126-949-11	ELECT	220uF	20%	35V
C503	1-126-923-11	ELECT	220uF	20%	10V
C601	1-126-964-11	ELECT	10uF	20%	50V
		< CONNECTOR >			
* CN201	1-506-944-11	PIN, CONNECTOR 2P			
CN204	1-564-505-11	PLUG, CONNECTOR 2P			
CN301	1-564-320-00	PIN, CONNECTOR (3.96mm PITCH) 2P			
CN402	1-785-104-11	PIN, CONNECTOR (3.96mm PITCH) 6P			
CNP111	1-691-765-11	PLUG (MICRO CONNECTOR) 3P			
		< DIODE >			
D205	8-719-110-31	DIODE RD12ESB2			
D206	8-719-110-31	DIODE RD12ESB2			
D301	8-719-991-33	DIODE 1SS133T-77			
D302	8-719-991-33	DIODE 1SS133T-77			
D303	8-719-991-33	DIODE 1SS133T-77			
D304	8-719-991-33	DIODE 1SS133T-77			
D305	8-719-991-33	DIODE 1SS133T-77			
D401	8-719-510-68	DIODE D5SBA204101			
D402	6-500-522-11	DIODE 10EDB40-TA2B5			
D403	6-500-522-11	DIODE 10EDB40-TA2B5			
D501	8-719-991-33	DIODE 1SS133T-77			

SA-WMSP69

MAIN **POWER TRANS** **SWITCH**

Ref. No.	Part No.	Description				Remark
		< GROUND TERMINAL >				
G1	1-537-738-21	TERMINAL, GROUND				
G2	1-537-738-21	TERMINAL, GROUND				
		< IC >				
IC202	8-759-636-74	IC M5218AP-22				
IC203	8-759-636-74	IC M5218AP-22				
		< TRANSISTOR >				
Q301	8-729-140-82	TRANSISTOR 2SA988-PAFAEA				
Q302	8-729-140-82	TRANSISTOR 2SA988-PAFAEA				
Q303	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q304	8-729-140-82	TRANSISTOR 2SA988-PAFAEA				
Q305	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q306	8-729-270-51	TRANSISTOR 2SC2705-O				
Q309	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q310	8-729-141-30	TRANSISTOR 2SC3623A-LK				
Q311	8-729-214-51	TRANSISTOR 2SA1145-O				
Q501	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q502	8-729-178-42	TRANSISTOR 2SC2784-F				
Q503	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q504	8-729-029-86	TRANSISTOR DTC124ESA				
		< RESISTOR >				
R101	1-247-871-11	CARBON	47K	5%	1/4W	
R102	1-247-871-11	CARBON	47K	5%	1/4W	
R110	1-247-879-11	CARBON	100K	5%	1/4W	
R202	1-247-831-11	CARBON	1K	5%	1/4W	
R205	1-247-879-11	CARBON	100K	5%	1/4W	
R206	1-249-429-11	CARBON	10K	5%	1/4W	
R207	1-249-429-11	CARBON	10K	5%	1/4W	
R209	1-247-847-11	CARBON	4.7K	5%	1/4W	
R210	1-247-871-11	CARBON	47K	5%	1/4W	
R211	1-247-863-11	CARBON	22K	5%	1/4W	
R212	1-249-428-11	CARBON	8.2K	5%	1/4W	
R213	1-249-428-11	CARBON	8.2K	5%	1/4W	
R214	1-247-879-11	CARBON	100K	5%	1/4W	
R216	1-249-429-11	CARBON	10K	5%	1/4W	
R217	1-247-879-11	CARBON	100K	5%	1/4W	
R301	1-247-847-11	CARBON	4.7K	5%	1/4W	
R304	1-247-871-11	CARBON	47K	5%	1/4W	
R305	1-249-413-11	CARBON	470	5%	1/4W	
R306	1-249-406-11	CARBON	120	5%	1/4W	
R307	1-249-411-11	CARBON	330	5%	1/4W	
R308	1-249-411-11	CARBON	330	5%	1/4W	
R309	1-249-408-11	CARBON	180	5%	1/4W	F
R310	1-249-408-11	CARBON	180	5%	1/4W	
⚠R311	1-215-868-00	METAL OXIDE	680	5%	1W	F
R312	1-247-863-11	CARBON	22K	5%	1/4W	
R313	1-247-863-11	CARBON	22K	5%	1/4W	
R314	1-247-871-11	CARBON	47K	5%	1/4W	
R316	1-249-408-11	CARBON	180	5%	1/4W	F
R317	1-249-393-11	CARBON	10	5%	1/4W	
R318	1-249-414-11	CARBON	560	5%	1/4W	
R319	1-247-871-11	CARBON	47K	5%	1/4W	
R320	1-249-393-11	CARBON	10	5%	1/4W	F
R321	1-249-407-11	CARBON	150	5%	1/4W	F
R322	1-247-863-11	CARBON	22K	5%	1/4W	
R323	1-249-429-11	CARBON	10K	5%	1/4W	
R324	1-249-408-11	CARBON	180	5%	1/4W	F
R325	1-249-401-11	CARBON	47	5%	1/4W	F
R326	1-249-393-11	CARBON	10	5%	1/4W	F
R327	1-234-182-11	ENCAPSULATED COMPONENT 0.22X2 5W				
R328	1-249-408-11	CARBON	180	5%	1/4W	F
R329	1-249-421-11	CARBON	2.2K	5%	1/4W	
⚠R401	1-215-892-11	METAL OXIDE	1K	5%	2W	F
⚠R402	1-215-892-11	METAL OXIDE	1K	5%	2W	F
⚠R403	1-219-786-11	FUSIBLE	22	5%	1/4W	F
⚠R404	1-219-786-11	FUSIBLE	22	5%	1/4W	F
R500	1-249-421-11	CARBON	2.2K	5%	1/4W	
R501	1-249-429-11	CARBON	10K	5%	1/4W	
R502	1-247-871-11	CARBON	47K	5%	1/4W	
R503	1-247-879-11	CARBON	100K	5%	1/4W	
R504	1-247-879-11	CARBON	100K	5%	1/4W	
R505	1-247-863-11	CARBON	22K	5%	1/4W	
R601	1-247-831-11	CARBON	1K	5%	1/4W	
		< RELAY >				
RY301	1-515-920-11	RELAY (24V)				
**********						
		POWER TRANS BOARD				
		**********				
	1-533-399-31	HOLDER, FUSE				
		< CAPACITOR >				
⚠C2	1-117-703-11	CERAMIC	0.0047uF		250V	
		< CONNECTOR >				
CN1	1-564-321-00	PIN, CONNECTOR (3.96mm PITCH) 2P				
* CN2	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P				
**********						
		SWITCH BOARD				
		**********				
		< CAPACITOR >				
⚠C901	1-117-703-11	CERAMIC	0.0047uF		250V	
		< CONNECTOR >				
* CN3	1-695-044-11	PIN, CONNECTOR (3.96mm PITCH) 2P				
* CN4	1-564-517-11	PLUG, CONNECTOR 2P				
		< DIODE >				
D901	6-501-077-01	LED LNH301MPU0A1 (POWER)				
		< SWITCH >				
⚠S901	1-554-920-11	SWITCH, PUSH (AC POWER) (1 KEY) (POWER)				
**********						

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
⚠53	1-783-820-11	CORD, POWER	
⚠F901	1-533-452-12	FUSE, GLASS TUBE (DIA. 5) (4A/125V)	
Q307	6-702-391-01	TRANSISTOR MP1620-OPY-MK	
Q308	6-702-390-01	TRANSISTOR MN2488-OPY-MK	
SP901	1-825-768-11	LOUD SPEAKER (25cm)	
⚠T1	1-443-652-11	TRANSFORMER, POWER	

REVISION HISTORY

Clicking the version allows you to jump to the revised page.
Also, clicking the version at the upper on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2005.05	New